

# Hand Dermatitis in Health Care Workers

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## Hand Washing and Dermatitis

Hand washing is a mandatory requirement to prevent transmission of disease. It is considered one of the single most important acts in preventing the spread of infections in the health care setting.

Hand washing exposes a person to an extraordinary amount of contact with water and soap/cleansing agents. This chronic exposure can result in irritant hand dermatitis--dry, fissured, inflamed and sometimes, very painful skin.

When hands are affected with dermatitis, compliance with hand washing regulations can be decreased due to avoidance of exposure to the irritants causing the problem. Hand dermatitis affects the integrity of the skin as a barrier to bodily fluids and pathogens. Inflamed hands can be colonized with more bacteria and be a potential source of pathogens. The compromise of the skin barrier in addition to the increased bacteria can result in occupationally acquired infections and the possible spread of infection to other coworkers or patients.

## Cause of Hand Dermatitis

Water is the primary cause of dermatitis. The constant wetting and drying removes protective substances from the skin making it less pliable and more prone to cracks and fissures. When soap/cleansing agents are added, these agents act as secondary irritants, resulting in a change in the pH of the skin and removal of protective lipids from the skin.

The frequency of washing, the time involved with exposure to water, cleansing agents and the temperature of the water are other factors that contribute to hand dermatitis. Low humidity and cold weather also make hand dermatitis worse. Health care workers who have a history of eczema in childhood may be more prone to hand dermatitis.

## Hand Washing Guidelines

There are specific guidelines as to when and how hands must be washed.

- Plain soap and water is used to remove surface dirt and some transient, acquired organisms.
- The addition of antibacterial agents in soaps (hand antiseptics) helps to increase the removal of transient organisms and to leave a residual amount of antibacterial agent on the skin.
- Protocols for surgical scrubs involve removing not only transient organisms from the skin but also attempt to remove as many resident flora as possible.

Unless one is using a surgical scrub protocol, hands need to be washed for at least 15 seconds with warm water combined with a soap/cleansing product. If the water is too hot, more protective oils are removed from the skin. Hands should be thoroughly dried after washing.

The use of gloves does not allow one to avoid washing their hands. Gloves provide an imperfect barrier to infectious material. Once gloves are removed, hand washing is imperative.

## Alcohol Sanitizing Emulsion Gels

Alcohol sanitizing emulsion gels are soap free, waterless hand antiseptic products that may be used as alternatives to water/soap/cleansing agents. Although the gels remove transient organisms, they do not remove dirt/contaminants from the skin. Eventually washing with soap and water is necessary.

## Moisturizer Issues in the Health Care Setting

Moisturizers act to replenish the outer skin layers with moisture and maintain the “natural barrier” of the skin. The use of hand lotions to relieve dryness of the skin has not been shown to increase the colonization of bacteria on the skin. Two issues are important when using moisturizers in the health care setting.

1. **Some** moisturizers containing anionic surfactants or emulsifiers **may** interfere with the residual antibacterial effect of chlorhexidine gluconate (CHG) on the skin. CHG is a common antimicrobial handwashing agent used in the health care setting. The type and concentration of emulsifiers and the chemical formulation of the moisturizer determine if the end product is anionic.

2. Federal and state directives\*\* have stated that **some** petroleum-based moisturizers **may** cause deterioration of latex gloves. As a general rule, if the first ingredient on a moisturizer is listed as water, it can be assumed it is not petroleum-based but water-based. There may be some petroleum ingredients in the moisturizer, such as petrolatum or mineral oil, but not as the main ingredient.

## Using Moisturizers in the Health Care Setting

Most moisturizers manufactured and distributed through medical supply companies for health care settings are latex glove and CHG compatible. Health care facilities may supply these moisturizers for their employees. Some facilities have policies in place to prevent the use of personal moisturizer products in the work place.

If employees **are allowed** to bring their own supply of moisturizer to work they should:

- use a product that is water-based,
- use a pump bottle, flip-top capped container or squeeze tube to prevent contamination of the product, and
- not share moisturizers with coworkers to decrease the possibility of contamination of the product.

## Prevention of Hand Dermatitis

The prevention of hand dermatitis is a matter of replacing the moisture lost from the skin due to constant exposure to water and soothing the irritant effect of soap/cleansing agents.

- Follow hand washing guidelines to use warm water, the least harsh soap for routine hand washing and dry hands thoroughly after washing.
- If possible, use alcohol emollient gels when hands are not soiled.
- Use water-based moisturizers after washing hands.
- Use a heavier, oil-based moisturizer under cotton gloves at home or away from work to help heal severely dry skin.

## **Treatment of Hand Dermatitis**

If the skin on the hands is red, inflamed or severely cracked, despite using moisturizers, medical attention should be sought to clear the skin. This may require the use of topical steroids, soaks, antibiotics (if there is evidence of infection) or removal from the job environment on a temporary basis.

- The longer hand dermatitis is present, the more difficult it is to treat and the more chronic it may become.
- Health care personnel with active hand dermatitis, regardless of cause, can develop secondary irritation and aggravation of the dermatitis by wearing gloves.
- The use of latex gloves should be minimized to reduce the risk of sensitization and potentially life threatening allergic reactions.

## **Persistent Hand Dermatitis**

It is less common that occupational hand dermatitis is caused by an allergy instead of irritation from water and soap.

- If hand dermatitis is persistent a person may need to be checked by a dermatologist or allergist for an allergic component to their rash.
- Employee health services can do a latex risk assessment, which is a screening questionnaire for latex sensitivity risk factors. If the

assessment is positive, a referral to a specialist to confirm the diagnosis may be needed.

- Some allergies may be due to contact with rubber additives, latex proteins, antibacterial agents in hand washing products, *and/or* preservatives or fragrances in moisturizers, etc.
- A history of eczema in childhood has been shown to increase one's susceptibility to hand dermatitis from chronic exposure to water and cleansing agents.

## **Summary**

Frequent hand washing is a mandatory requirement in health care settings to prevent the spread of infection from organisms on the hands. The continual use of water and soap can potentially result in hand dermatitis. Protection from this problem requires the maintenance of the natural skin barrier.

To prevent hand dermatitis:

- Wash with warm, not hot water,
- Use the least harsh soap or lowest concentration of antibacterial soaps,
- Use alcohol sanitizing emulsion gels if feasible,
- Use water-based moisturizers liberally,
- Use non-latex gloves, and
- Protect and treat the hands when away from the work environment.

\*\* Occupational Safety and Health Administration (OSHA) Directive for Enforcement Procedures for the Occupational Exposure to Bloodborne Pathogens (CPL 2-2,44D) and Washington Industrial Safety and Health Act (WISHA) Regional Directive (WRD) 11.40

## **Where can I get more information?**

### **Hand Dermatitis**

Hannuksela, A. and Hannuksela, M. Soaps and detergents in skin diseases. *Clinics in Dermatology* 1996; 14: 77-80.

Larson, E. L., et al. Changes in bacterial flora associated with skin damage on hands of health care personnel. *American Journal Infection Control* 1998; 26: 513-521.

Meding, B., et al. Occupational dermatoses among health care workers. In: Hasselhorn, M. M., Toomingas, A. and Lagerstrom, M., editors. *Occupational Health for Health Care Workers*. New York: Elsevier Science, BV, 1999; 103-110.

### **Hand Washing Guidelines**

Larson, E. L. APIC Guideline for Hand Washing and Hand Antisepsis in Health-Care Settings. *American Journal Infection Control* 1995; 23: 251-269.

Available at <http://www.apic.org/resc/guidlist.cfm>

CDC Guideline for Handwashing and Hospital Environmental Control, 1985.

Available at <http://www.cdc.gov/ncidod/hip/Guide/handwash.htm>

WISHA Regional Directive, WISHA Services Department of Labor and Industries. 11.40—Bloodborne Pathogens. Information Issued 12/28/2000

Available at <http://www.LNI.wa.gov/wisha/>

Located in Regulations/Policy: WISHA Regulations Directory, Issued after 1996

OSHA Directives: CPL 2-2,44D--Enforcement Procedures for the Occupational Exposure to Bloodborne Pathogens. Information Issued 11/05/1999

Available at [http://www.osha-slc.gov/OshDoc/Directive\\_data/CPL\\_2-2\\_44D.html](http://www.osha-slc.gov/OshDoc/Directive_data/CPL_2-2_44D.html)

### **Latex Sensitivity**

OSHA Technical Links: Latex allergy. Latex allergy references and resources.

Available at <http://www.osha-slc.gov/SLTC/latexallergy/index.html>

NIOSH Alert: Preventing allergic reactions to natural latex in the workplace.

Available at <http://www.cdc.gov/niosh/latexalt.html>

NIOSH: Latex Allergy: A prevention guide.

Available at <http://www.cdc.gov/niosh/98-113.html>

State of Washington, Department Labor and Industries. Hazard alert: latex allergy.

Available at <http://www.LNI.wa.gov/wisha/>

Located in Safety/Health Topics under Latex Alert

### **Other Resources**

Washington State Department of Labor and Industries Safety and Health Assessment and Research for Prevention Program: [www.LNI.wa.gov/sharp/derm](http://www.LNI.wa.gov/sharp/derm)

American Academy of Dermatology: [www.aad.org](http://www.aad.org)

American Association of Occupational Health Nurses: [www.aaohn.org](http://www.aaohn.org)

American Nurses Association: [www.ana.org](http://www.ana.org)

Association of Professionals in Infection Control and Epidemiology: [www.apic.org](http://www.apic.org)